

REMARKS

Applicants would like to begin by addressing the misnumbered claims. More specifically, Applicants inadvertently misnumbered originally-filed claims 16-38 and 50-56. These claims should have been numbered as claims 18-40 and 52-58, respectively. Applicants thank the Examiner for noting this typographical error and have amended the claims accordingly. Within this Response, Applicants will address the claims in accordance with the correct numbering scheme.

In the Office Action, the Examiner rejected claims 1-40 and 52-58. By the present Response, claims 1, 9, 18-40 and 52-58 have been amended and claims 17, 22, 29 and 36 have been cancelled without prejudice. Accordingly, claims 1-16, 18-21, 23-28, 30-35, 37-40 and 52-58 remain pending in the present application. Reconsideration and allowance of all pending claims are respectfully requested.

In the Office Action, the Examiner objected to the drawings for failing to comply with 37 C.F.R. § 1.84(p)(5). Specifically, the Examiner objected to the fact that Figure 1 was, "missing reference numbers 16 and 22." Applicants would like to thank the Examiner for bringing this error to attention. Applicants have amended the drawings as shown in red-ink on the figure sheet attached hereto. These amendments are believed to obviate the Examiner's objection. Withdrawal of the objection is respectfully requested.

In the Office Action, the Examiner objected to the claims under 37 C.F.R. §1.126 for failing to preserve a proper numbering scheme. As stated above, Applicants have amended the claims such that a proper numbering scheme is reflected. More particularly, originally-filed claims 16-38 and 50-56 have been properly renumbered to respectively read as claims 18-40 and 52-58. In light of these amendments, Applicants respectfully request the objection be withdrawn.

Rejections under 35 U.S.C. §112

In the Office Action, the Examiner rejected claims 52-58 under §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Specifically, the Examiner rejected the claim based upon a perceived unclarity regarding the phrase “pullout torque” as recited in lines 1-2 of claim 52. *See* Paper No. 6, page 3. Applicants have amended the claim to recite “a removal torque” as suggested by the Examiner. Applicants note that the amendment is solely for the purposes of clarification, and, as such, should not be viewed as an alteration to the scope of the amended claim. In light of the amendment, reconsideration and allowance are respectfully requested.

Rejections under 35 U.S.C. §103

In the Office Action, the Examiner presented a number of reference combinations to reject the pending claims. Applicants respectfully assert that the claims, as pending, are patentable over the cited references taken alone or in combination. Applicants will address each of the Examiner’s reference combinations in turn.

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985).

A. First Rejection Under 35 U.S.C. §103(a)

In the Office Action, the Examiner rejected claims 1-8 and 52-55 under 35 U.S.C. §103(a) as being unpatentable over Hiroyuki (US 5,110,245) in view of Gutshall (US 4,069,730). Applicants respectfully assert that the pending claims are, in fact, patentable over the cited reference combination.

Claim 1 and its Dependent Claims

Beginning with amended independent claim 1, this claim recites, *inter alia*, “wherein the respective profiles comprise a continuous crest.” This is but one of the features the cited reference combination does not disclose.

First there is no reason to believe that this feature is disclosed in the Hiroyuki reference. As can be clearly seen by the Hiroyuki reference’s illustrations, the bases 6 *interrupt* the profile of the respective thread 4. *See* Hiroyuki, Fig. 2. Moreover, this interpretation is supported by the text of the cited reference which explicitly defines the thread 4 as being *interrupted*. *See* Hiroyuki, column 3, lines 56-62. In contrast, the claimed invention, as shown in exemplary Figure 1 of the application, illustrates the crest of the lead as being *continuous* as it travels along the shank. Moreover, exemplary Figure 2, of the present application, also illustrates the crest (element 28) as being continuous. *See* Application, Figure 2; *see also* Application, page 6, lines 1-14. By juxtaposing the foregoing exemplary figures of the instant application with those of the Hiroyuki reference, Applicants respectfully assert that the antithetical configuration between the two references is more than evident.

Secondly, there is no reason to believe that the Gutshall reference is capable of satisfying the deficiencies of the Hiroyuki reference as outlined above. The thread profile of the Gutshall reference transitions from a position radially outward from the core to complete usurpation by the core 17 at blank spaces 22. *See* Gutshall, Figure

4; *see also* Gutshall, column 3, lines 24-27. In other words, the thread forming crests 18 of the Gutshall reference are *discontinuous* as they are *interrupted* by the blank spaces 22. *See id.*

Because the cited references, taken alone or in combination, do not disclose all of the recited features of the instant claim, Applicants respectfully assert that independent claim 1 and its respective dependent claims 2-8 are patentable over the cited reference combination.

Claim 52 and its Dependent Claims

Turning next to amended independent claim 52, this claim recites, *inter alia*, “a threaded shank..., wherein a ratio of removal torque to insertion torque is greater than 0.8.” Applicants respectfully assert that this feature is but one of the features not disclosed within the cited references, taken alone or in combination.

Within the Office Action, however, the Examiner stated that:

Hiroyuki discloses a threaded fastener comprising a head 2, a tip 3b, and a threaded shank extending between the head and tip. The value of the ratios of “pullout” or removal torque to insertion torque is intended use and would be dependent upon the material that the screw is used with.

See Paper No. 6, page 4. Applicants respectfully disagree with the Examiner’s assertion.

First, the Examiner has presented no evidence to support his assertion regarding the determining factor of removal torque and insertion torque. Accordingly, Applicants respectfully assert that the Examiner has essentially taken Official Notice of facts outside the record that the Examiner apparently believes are capable of demonstration as being “well-known” in the art. Therefore, in accordance with M.P.E.P. §2144.03, Applicants hereby seasonably traverse and challenge the Examiner’s use of Official Notice.

Secondly, from a technical standpoint, Applicants respectfully assert that the value of insertion torque ratios with respect to removal torque ratios is typically not a function of the material, as the Examiner contends. Whether the screw is being inserted or removed, the material would remain a constant, and, as such, the insertion torque and removal torque are generally determined by properties of the fastener rather than the material with which the fastener is employed. Keeping this in mind, Applicants respectfully assert that there is no reason to believe that the recited ratios within the instant claim are disclosed within the cited references, taken alone or in combination. Moreover, Applicants respectfully assert that to assume such would be to read into the references elements that are not disclosed therein.

Because the cited references, taken alone or in combination, do not disclose all of the features recited within the instant claim, Applicants respectfully assert that independent claim 52 and its respective dependent claims 53-55 are patentable over the cited references. Reconsideration and allowance are respectfully requested.

Lack of Motivation or Suggestion to Combine

Even assuming, *arguendo*, the Examiner is able to present a reference combination that discloses all of the features of a claim, the Examiner must still present a convincing line of reasoning as to why the skilled artisan would combine the references to reach the rejected claim. In other words, the artisan, viewing only the collective teachings of the references, must find it obvious to selectively to pick and choose various elements and/or concepts from the cited references to arrive at the claimed invention. See *Ex parte* Clapp, 227 U.S.P.Q. 972 (B.P.A.I. 1985). The Federal Circuit has warned that the Examiner must not, "fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher." See *id.* When prior art references require a selected combination to render obvious a subsequent

invention, there must be some reason for the combination other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988). One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988).

In the instant case, Applicants respectfully submit that the Examiner is, at best, using the application as a road map to reject the claims. As discussed above, Applicants respectfully assert such hindsight reconstruction is improper.

For the reasons delineated above, independent claims 1 and 52 as well as their respective dependent claims 2-8 and 53-55 are believed to be patentable over the cited reference combination. Reconsideration and allowance are respectfully requested.

B. Second Rejection under 35 U.S.C. §103(a)

In the Office Action, the Examiner rejected claims 9-16, 18-21, 23-28, 30-35 and 56-58 under 35 U.S.C. §103(a) as being unpatentable over Hiroyuki, in view of Gutshall, in further view of Thom (US 23,409). Applicants respectfully assert that the instant claims are patentable over the cited references taken alone or in combination.

Claims 9-40

Beginning with claims 9-40, each of these claims, in the broadest sense, recites features related to a substantially constant insertion torque. For example, each of the respective independent claims recites as follows:

Claim 9: "wherein the profiles of the first and second leads are configured to provide a substantially constant insertion torque";

Claim 18: "wherein the first and second bosses and the first and second bases are disposed along the shank to provide a substantially constant insertion torque";

Claim 25: "wherein the first and second bosses and the first and second bases are disposed along the shank to provide a substantially constant insertion torque"; and

Claim 32: "wherein the first and second bosses and the first and second bases are disposed along the shank to provide a substantially constant insertion torque."

First, there is no reason to believe that this feature is disclosed within the Hiroyuki reference. With regards to the driving torque, this reference states, "[d]uring this operation, the driving torque given to it [the fastener 1] can be concentrated on the interrupted thread 4 and the fastener 1 can swage a female thread without fail even in a rather hardened workpiece 5 because the screw thread 4 over the straight portion 3a is interrupted by a plural slot recesses 6 at an equal distance." *See* Hiroyuki, column 4, lines 46-52. Applicants respectfully assert that this section not only fails to disclose the recited feature, but also teaches away from the constant insertion torque recited in the instant claim. Because the placement of the recesses 6 is based solely on its distance from the preceding base along the thread 4, there is no reason to believe the bosses 4 are disposed to provide any semblance of a substantial constant insertion torque. *See Id.*, lines 51-52. Rather, the figures of the cited reference illustrate a thread form that would have a *varying* insertion torque. *See* Hiroyuki, Fig. 2. In operation, as the fastener of Hiroyuki is inserted into a material, the relative axial alignment of the bases 6 would cause the insertion torque to dramatically fall as the thread passed from a threaded portion 4 to the base portion 6. This interpretation is buttressed by the fact that the driving torque is concentrated on the interrupted threads 4. *See* col. 4, lines 47-48. As such, there is no reason to believe that the insertion torque would be substantially constant as recited in the instant claim.

Secondly, there is no reason to believe that the Gutshall reference is capable of satisfying the deficiencies of the Hiroyuki reference as outlined above. Gutshall at no point discusses insertion torque being substantially constant during insertion. *See* Gutshall, column 4, lines 14-54. Moreover, the cited reference clearly discloses a fastener that would have varying insertion torques. *See* Gutshall, Figs. 7-8. Accordingly, Applicants respectfully assert that finding the above-recited feature within the instant reference, specifically Gutshall, would be to read into the reference elements that are not disclosed therein.

As stated above, neither the Hiroyuki reference nor the Gutshall reference discloses these features. Moreover, there is no reason to believe that the Thom reference is capable of satisfying the deficiencies regarding either of the previous references. Simply put, the Thom reference, a reference published in 1859, merely discloses a double thread wood-screw. *See* Thom, column 1, paragraph 4. Again, to assume that the cited references disclose the “substantially constant insertion torque” as recited in the instant claims would be to read into the references features that are not disclosed therein.

Because the cited references do not disclose all of the recited features of the instant claims, Applicants respectfully assert that independent claim 9 and its respective dependent claims 10-16, independent claim 18 and its respective dependent claims 21 and 23-24, independent claim 25 and its respective dependent claims 27-28 and 30-31, and independent claim 32 and its respective dependent claims 33-35 and 37-40 are patentable over the cited reference combination.

Moreover, as discussed above, even if the Examiner is able to present references that disclose all of the recited features of a claim, the Examiner must still present a convincing line of reasoning for making the combination. Applicants respectfully assert

that the Examiner has not made such a showing. Rather, Applicants respectfully assert that the Examiner has, at best, employed impermissible hindsight and used the instant application as a road map to reach the claims.

For the foregoing reasons, Applicants respectfully assert that pending claims 9-16, 18-21, 23-28, 30-35 and 37-40 are patentable over the cited reference combination. Reconsideration and allowance are respectfully requested.

Turning lastly to dependent claims 56-58, Applicants respectfully assert that these claims are patentable over the cited reference combination. Applicants note that claims 56-58 are dependent claims that depend from independent claim 52. As such, Applicants respectfully assert that the additional Thom reference does not satisfy the deficiencies of the Hiroyuki-Gutshall reference combination as applied above to independent claim 52. Again, the Thom reference merely discloses a double-threaded wood screw. *See* Thom, Column 1, paragraph 4. Accordingly, Applicants respectfully assert that dependent claims 56-58 are patentable not only for their dependency upon independent claim 52, but also for additional features recited therein. Accordingly, reconsideration and allowance are respectfully requested.

Attachment

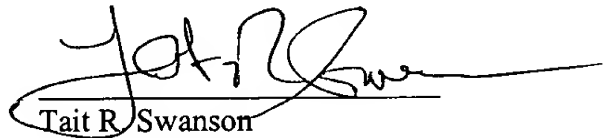
Attached hereto is a marked-up version of the changes made to the drawings and to the claims by the current amendment. The attached page is captioned "**VERSION WITH MARKINGS TO SHOW CHANGES MADE**".

Conclusion

In view of the above remarks and amendments set forth above, the Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Date: 2/28/03

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Tait R. Swanson', written over a horizontal line.

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE DRAWINGS

Please amend the drawings as shown in red-ink on the sheets attached hereto.

IN THE CLAIMS

Please amend the claims as follows:

1. (Amended) A threaded fastener comprising:

a head;

a tip; and

a threaded shank extending between the head and the tip, the threaded shank having a helical lead formed thereon, the lead including a plurality of bosses therealong, successive bosses being separated from one another by recessed bases, each boss extending radially beyond adjacent bases and presenting a respective profile including a lead-in profile in a direction towards the tip, a respective lead-out profile in a direction towards the head and a central section of substantially uniform radial dimension, wherein the respective profiles comprise a continuous crest.

9. (Amended) A threaded fastener comprising:

a head;

a tip;

a threaded shank extending between the head and the tip;

a first helical lead formed on the shank and including a plurality of first bosses therealong, successive first bosses being separated from one another by first bases, each first boss extending radially beyond adjacent first bases and presenting a respective profile including a lead-in profile in a direction towards the tip, a respective lead-out profile in a direction towards the head; and

a second helical lead including a plurality of second bosses therealong, successive second bosses being separated from one another by second bases, each second boss

extending radially beyond adjacent second bases and presenting a respective profile including a lead-in profile in a direction towards the tip, a respective lead-out profile in a direction towards the head;

wherein the profiles of the first and second leads are configured to provide a substantially constant insertion torque.

~~16~~ 18. (Amended) A double-lead threaded fastener comprising:

a tip;

a head;

a shank extending between the tip and the head;

a first helical lead disposed about the shank and including first bosses separated by first bases, the first bosses extending radially beyond the first bases; and

a second helical lead disposed about the shank and including second bosses separated by second bases, the second bases extending radially beyond the second bases;

wherein the first bosses and the second bases are disposed along the shank at generally corresponding locations, and the second bosses and the first bases are disposed along the shank at generally corresponding locations, and wherein the first and second bosses and the first and second bases are disposed along the shank to provide a substantially constant insertion torque.

~~17~~ 19. (Amended) The fastener of claim ~~16~~ 18, wherein each of the first and second bosses includes a respective lead-in profile and lead-out profile, and wherein the lead-in profiles of the first bosses and the lead-out profiles of the second bosses are disposed at generally corresponding locations along the shank, and the lead-out profiles of the first bosses and the lead-in profiles of the second bosses are disposed at generally corresponding locations along the shank.

~~18~~ 20. (Amended) The fastener of claim ~~17~~ 19, wherein the lead-in profiles of at least two of the bosses of the first and the second leads are different from one another.

~~19~~ 21. (Amended) The fastener of claim ~~17~~ 19, wherein lead-out profiles of at least two of the bosses of the first and second leads are different from one another.

~~21~~ 23. (Amended) The fastener of claim ~~17~~ 19, wherein the lead-in profiles of the bosses of the first and second leads are inclined less than the lead-out profiles for the same bosses.

~~22~~ 24. (Amended) The fastener of claim ~~16~~ 18, wherein the first lead is identical to the second lead.

~~23~~ 25. (Amended) A double-lead threaded fastener comprising:
a tip;
a head;
a shank extending between the tip and the head;
a first helical lead disposed about the shank and including first bosses separated by first bases, the first bosses extending radially beyond the first bases; and
a second helical lead identical to the first helical lead, the second helical lead being disposed about the shank and including second bosses separated by second bases, the second bases extending radially beyond the second bases;
wherein the respective first and second bosses are displaced from one another by 180 degrees at generally corresponding locations along the shank, and wherein the first and second bosses and the first and second bases are disposed along the shank to provide a substantially constant insertion torque.

24 26. (Amended) The fastener of claim 23 25, wherein each of the first and second bosses includes a respective lead-in profile and lead-out profile, and wherein the lead-in profiles of the first bosses and the lead-out profiles of the second bosses are disposed at generally corresponding locations along the shank, and the lead-out profiles of the first bosses and the lead-in profiles of the second bosses are disposed at generally corresponding locations along the shank.

25 27. (Amended) The fastener of claim 24 26, wherein the lead-in profiles of at least two of the bosses of the first and the second leads are different from one another.

26 28. (Amended) The fastener of claim 24 26, wherein lead-out profiles of at least two of the bosses of the first and second leads are different from one another.

28 30. (Amended) The fastener of claim 24 26, wherein the lead-in profiles of the bosses of the first and second leads are inclined less than the lead-out profiles for the same bosses.

29 31. (Amended) The fastener of claim 23 25, wherein profiles of bosses of the first and the second leads vary along the shank from the tip to the head.

30 32. (Amended) A double-lead threaded fastener comprising:
a tip;
a head;
a shank extending between the tip and the head;
a first helical lead disposed about the shank and including first bosses separated by first bases, the first bosses extending radially beyond the first bases and less than a 360 degrees around the shank; and

a second helical lead identical to the first helical lead, the second helical lead being disposed about the shank and including second bosses separated by second bases, the second bases extending radially beyond the second bases and less than 360 degrees around the shank;

wherein the respective first and second bosses are displaced from one another by 180 degrees at generally corresponding locations along the shank, and wherein the first and second bosses and the first and second bases are disposed along the shank to provide a substantially constant insertion torque.

~~31~~ 33. (Amended) The fastener of claim ~~30~~ 32, wherein each of the first and second bosses includes a respective lead-in profile and lead-out profile, and wherein the lead-in profiles of the first bosses and the lead-out profiles of the second bosses are disposed at generally corresponding locations along the shank, and the lead-out profiles of the first bosses and the lead-in profiles of the second bosses are disposed at generally corresponding locations along the shank.

~~32~~ 34. (Amended) The fastener of claim ~~31~~ 33, wherein the lead-in profiles of at least two of the bosses of the first and the second leads are different from one another.

~~33~~ 35. (Amended) The fastener of claim ~~31~~ 33, wherein lead-out profiles of at least two of the bosses of the first and second leads are different from one another.

~~35~~ 37. (Amended) The fastener of claim ~~31~~ 33, wherein the lead-in profiles of the bosses of the first and second leads are inclined less than the lead-out profiles for the same bosses.

~~36~~ 38. (Amended) The fastener of claim ~~30~~ 32, wherein profiles of bosses of the first and the second leads vary along the shank from the tip to the head.

~~37~~ 39. (Amended) The fastener of claim ~~30~~ 32, wherein each of the first and second bosses extends less than 180 degrees around the shank.

~~38~~ 40. (Amended) The fastener of claim ~~37~~ 39, wherein each of the first and second bosses extends less than 90 degrees around the shank.

~~50~~ 52. (Amended) A threaded fastener comprising:

a head;

a tip; and

a threaded shank extending between the head and the tip, the threaded shank having a helical lead formed thereon, the lead including a plurality of bosses therealong, successive bosses being separated from one another by recessed bases, each boss extending radially beyond adjacent bases and presenting a respective profile including a lead-in profile in a direction towards the tip, a respective lead-out profile in a direction towards the head and a central section of substantially uniform radial dimension, wherein a ratio of pullout removal torque to insertion torque is greater than 0.8.

~~51~~ 53. (Amended) The threaded fastener of claim ~~50~~ 52, wherein the ratio is greater than 0.9.

~~52~~ 54. (Amended) The threaded fastener of claim ~~51~~ 53, wherein the ratio is greater than 1.0

~~53~~ 55. (Amended) The threaded fastener of claim ~~52~~ 54, wherein the ratio is greater than 1.1.

~~54~~ 56. (Amended) The threaded fastener of claim ~~50~~ 52, wherein the fastener comprises first and second leads about a shank, each lead having a series of bosses, lead-in profiles and lead-out profiles of the bosses differing from one another to provide the ratio.

~~55~~ 57. (Amended) The threaded fastener of claim ~~54~~ 56, wherein the first and second leads are identical to one another.

~~56~~ 58. (Amended) The threaded fastener of claim ~~54~~ 56, wherein crests of the lead-in profiles are inclined at approximately 15 degrees from the thread root, and crests of the lead-out profiles are inclined at approximately 45 degrees from the thread root.